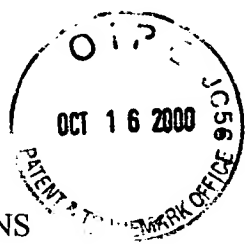


act to #8

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TECH CENTER 1600/2900



SEQUENCE LISTING

<110> Elledge, Stephen J.  
Sanchez, Yolanda

<120> MAMMALIAN CHECKPOINT GENES AND PROTEINS

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<140> 09/488,364

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<210> 1

<211> 476

<212> PRT

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35 40 45

Pro Glu Asn Ile Lys Lys Glu Ile Cys Ile Asn Lys Met Leu Asn His  
50 55 60

Glu Asn Val Val Lys Phe Tyr Gly His Arg Arg Glu Gly Asn Ile Gln  
65 70 75 80

Tyr Leu Phe Leu Glu Tyr Cys Ser Gly Gly Glu Leu Phe Asp Arg Ile  
85 90 95

Glu Pro Asp Ile Gly Met Pro Glu Pro Asp Ala Gln Arg Phe Phe His  
100 105 110

Gln Leu Met Ala Gly Val Val Tyr Leu His Gly Ile Gly Ile Thr His  
115 120 125

50

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Arg Asp Ile Lys Pro Glu Asn Leu Leu Asp Glu Arg Asp Asn Leu  
130 135 140

Lys Ile Ser Asp Phe Gly Leu Ala Thr Val Phe Arg Tyr Asn Asn Arg  
145 150 155 160

Glu Arg Leu Leu Asn Lys Met Cys Gly Thr Leu Pro Tyr Val Ala Pro  
165 170 175

Glu Leu Leu Lys Arg Arg Glu Phe His Ala Glu Pro Val Asp Val Trp  
180 185 190

Ser Cys Gly Ile Val Leu Thr Ala Met Leu Ala Gly Glu Leu Pro Trp  
195 200 205

Asp Gln Pro Ser Asp Ser Cys Gln Glu Tyr Ser Asp Trp Lys Glu Lys  
210 215 220

Lys Thr Tyr Leu Asn Pro Trp Lys Lys Ile Asp Ser Ala Pro Leu Ala  
225 230 235 240

Leu Leu His Lys Ile Leu Val Glu Asn Pro Ser Ala Arg Ile Thr Ile  
245 250 255

Pro Asp Ile Lys Lys Asp Arg Trp Tyr Asn Lys Pro Leu Lys Lys Gly  
260 265 270

Ala Lys Arg Pro Arg Val Thr Ser Gly Gly Val Ser Glu Ser Pro Ser  
275 280 285

Gly Phe Ser Lys His Ile Gln Ser Asn Leu Asp Phe Ser Pro Val Asn  
290 295 300

Ser Ala Ser Ser Glu Glu Asn Val Lys Tyr Ser Ser Ser Gln Pro Glu  
305 310 315 320

Pro Arg Thr Gly Leu Ser Leu Trp Asp Thr Ser Pro Ser Tyr Ile Asp  
325 330 335

Lys Leu Val Gln Gly Ile Ser Phe Ser Gln Pro Thr Cys Pro Asp His  
340 345 350

Met Leu Leu Asn Ser Gln Leu Leu Gly Thr Pro Gly Ser Ser Gln Asn  
355 360 365

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Pro Trp Gln Arg Leu Val Lys Arg Met Thr Arg Phe Phe Thr Lys Leu  
370 375 380

Asp Ala Asp Lys Ser Tyr Gln Cys Leu Lys Glu Thr Cys Glu Lys Leu  
385 390 395 400

Gly Tyr Gln Trp Lys Lys Ser Cys Met Asn Gln Val Thr Ile Ser Thr  
405 410 415

Thr Asp Arg Arg Asn Asn Lys Leu Ile Phe Lys Val Asn Leu Leu Glu  
420 425 430

Met Asp Asp Lys Ile Leu Val Asp Phe Arg Leu Ser Lys Gly Asp Gly  
435 440 445

Leu Glu Phe Lys Arg His Phe Leu Lys Ile Lys Gly Lys Leu Ile Asp  
450 455 460

Ile Val Ser Ser Gln Lys Val Trp Leu Pro Ala Thr  
465 470 475

<210> 2

<211> 476

<212> PRT

<213> Mus musculus

<400> 2

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20 25 30

Gln Ala Val Ala Val Lys Ile Val Asp Met Lys Arg Ala Ile Asp Cys  
35 40 45

Pro Gln Asn Ile Lys Lys Glu Ile Cys Ile Asn Lys Met Leu Ser His  
50 55 60

Glu Asn Val Val Lys Phe Tyr Gly His Arg Arg Glu Gly His Ile Gln  
65 70 75 80

Tyr Leu Phe Leu Glu Tyr Cys Ser Gly Gly Glu Leu Phe Asp Arg Ile  
85 90 95

Glu Pro Asp Ile Gly Met Pro Glu Gln Asp Ala Gln Arg Phe Phe His  
100 105 110

Gln Leu Met Ala Gly Val Val Tyr Leu His Gly Ile Gly Ile Thr His  
115 120 125

Arg Asp Ile Lys Pro Glu Asn Leu Leu Leu Asp Glu Arg Asp Asn Leu  
130 135 140

Lys Ile Ser Asp Phe Gly Leu Ala Thr Val Phe Arg His Asn Asn Arg  
145 150 155 160

Glu Arg Leu Leu Asn Lys Met Cys Gly Thr Leu Pro Tyr Val Ala Pro  
165 170 175

Glu Leu Leu Lys Arg Lys Glu Phe His Ala Glu Pro Val Asp Val Trp  
180 185 190

Ser Cys Gly Ile Val Leu Thr Ala Met Leu Ala Gly Glu Leu Pro Trp  
195 200 205

Asp Gln Pro Ser Asp Ser Cys Gln Glu Tyr Ser Asp Trp Lys Glu Lys  
210 215 220

Lys Thr Tyr Leu Asn Pro Trp Lys Lys Ile Asp Ser Ala Pro Leu Ala  
225 230 235 240

Leu Leu His Lys Ile Leu Val Glu Thr Pro Ser Ala Arg Ile Thr Ile  
245 250 255

Pro Asp Ile Lys Lys Asp Arg Trp Tyr Asn Lys Pro Leu Asn Arg Gly  
260 265 270

Ala Lys Arg Pro Arg Ala Thr Ser Gly Gly Met Ser Glu Ser Ser Ser  
275 280 285

Gly Phe Ser Lys His Ile His Ser Asn Leu Asp Phe Ser Pro Val Asn  
290 295 300

Asn Gly Ser Ser Glu Glu Thr Val Lys Phe Ser Ser Ser Gln Pro Glu  
305 310 315 320

Pro Arg Thr Gly Leu Ser Leu Trp Asp Thr Gly Pro Ser Asn Val Asp  
325 330 335

Lys Leu Val Gln Gly Ile Ser Phe Ser Gln Pro Thr Cys Pro Glu His  
340 345 350

Met Leu Val Asn Ser Gln Leu Leu Gly Thr Pro Gly Phe Ser Gln Asn  
355 360 365

Pro Trp Gln Arg Leu Val Lys Arg Met Thr Arg Phe Phe Thr Lys Leu  
370 375 380

Asp Ala Asp Lys Ser Tyr Gln Cys Leu Lys Glu Thr Phe Glu Lys Leu  
385 390 395 400

Gly Tyr Gln Trp Lys Lys Ser Cys Met Asn Gln Val Thr Val Ser Thr  
405 410 415

Thr Asp Arg Arg Asn Asn Lys Leu Ile Phe Lys Ile Asn Leu Val Glu  
420 425 430

Met Asp Glu Lys Ile Leu Val Asp Phe Arg Leu Ser Lys Gly Asp Gly  
435 440 445

Leu Glu Phe Lys Arg His Phe Leu Lys Ile Lys Gly Lys Leu Ser Asp  
450 455 460

Val Val Ser Ser Gln Lys Val Trp Phe Pro Val Thr  
465 470 475

<210> 3

<211> 1761

<212> DNA

<213> Homo sapiens

<400> 3

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ggacttgag caaacctgg gagaaggtgc ctatggagaa gttcaactg ctgtgaatag 120  
agtaactgaa gaagcagtcg cagtgaagat ttagatatg aagcgtgccg tagactgtcc 180  
agaaaatatt aagaaagaga tctgtatcaa taaaatgcta aatcatgaaa atgtagtaa 240  
attctatggt cacaggagag aaggcaatat ccaatattta ttctggagt actgtagtgg 300  
aggagagctt ttgacagaa tagagccaga catagggcatg cctgaaccag atgctcagag 360  
attttccat caactcatgg caggggtggg ttatctgcat ggtattggaa taactcacag 420  
ggatatataa ccagaaaatc ttctgttga tgaaaggat aacctcaaaa tctcagactt 480  
tggcttggca acagtattc ggtataataa tctgagcgt ttgtgaaca agatgtgtgg 540  
tactttacca tatgtgtc cagaactct gaagagaaga gaatttcag cagaaccagt 600  
tgatgttgg tctgtggaa tagtacttac tgcaatgctc gctggagaat tgccatggga 660

ccaacccagt gacagctgtc aggagtattc tgactggaaa gaaaaaaaaa catacctcaa 720  
 cccttggaagaa aaaatcgatt ctgctcctct agctctgctg cataaaatct tagttgagaa 780  
 tccatcagca agaattacca ttccagacat caaaaaagat agatggtaca acaaacccct 840  
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 agaaaatgtg aagtactcca gttctcagcc agaaccccg acaggtcttt cttatggga 1020  
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 tctgatcat atgcttttga atagtcagtt acttggcacc ccaggatcct cacagaaccc 1140  
 ctggcagcgg ttggtcaaaa gaatgacacg attctttacc aaattggatg cagacaaatc 1200  
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 gaatcaggtt actatatcaa caactgatag gagaacaat aaactcattt tcaaagtga 1320  
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 ggagtccaag agacacttcc tgaagattaa agggaagctg attgatattg tgagcagcca 1440  
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 atagtagttc ctgaagtgtt cacttccctg tttatccaaa catcttcaa ttattttgt 1560  
 ttgttcggca tacaataat acctatatct taattgtaag caaaacttg gggaaaggat 1620  
 gaatagaatt catttgatta ttcttcatg tgtgttagt atctgaattt gaaactcacc 1680  
 tgggtgaaac caagtttcag gggacatgag tttccagct ttatacaca cgtatctcat 1740  
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<210> 4

<211> 1962

<212> DNA

<213> Mus musculus

<400> 4

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 agctgttgca gtgaaaattg tagacatgaa gggggccata gactgtccac aaaatattaa 180  
 gaaagagatc tgcataata aaatgttaag ccacgagaat gtagtgaaat tctatggcca 240  
 caggagggaa ggccatatcc agtatctgtt tctggagtag ttagtgagag gagaactttt 300  
 tgatagaatt gagccagaca tagggatgcc tgaacaagat gtcagaggt tctccacca 360  
 actcatggca ggggtggtt atcttcatg aattggaata actcacagg atattaaacc 420  
 agaaaacctc ctcttgatg aaagggataa cctcaaaatc tctgacttg gcttggaac 480  
 ggtatttcgg cataataatc gtgaacgctt actgaacaag atgtgtggga cttaccta 540  
 tgttctccg gagcttctaa agagaaaaga atttcatgca gaaccagttg atgtttggtc 600  
 ctgtggaata gtacttactg caatgttggc tggagaattg ccgtgggacc agcccagtga 660  
 tagctgtcag gaatattctg attggaaaga aaaaaaac tctcaatc cttggaaaaa 720  
 aattgattct gctcctctgg cttgtctca taaaattcta gttgagactc catcagaag 780  
 gatcaccatc ccagacatta agaaagatag atggtacaac aaaccactta acagaggagc 840  
 aaagaggcca cgcgccatc caggtggtat gtcagagtct tctagtggat tcttaagca 900  
 cattattcc aatttgact ttttccagt aaataatggt tccagtgaag aaaccgtgaa 960  
 gttcttagt tccagccag agccgagaac agggcttcc ttgtgggaca ctggtccctc 1020  
 gaacgtggac aaactggtc agggcatcag ttttccag cctacgtgtc ctgagcatat 1080  
 gcttgtaaac agtcagttac tcggtacccc tggatttca cagaaccctt ggcagcgctt 1140

ggTcaaaagg atgacacgat tcttactaa attggatgCG gacaaatctt accaatgcct 1200  
 gaaagagacc ttcgagaagt tgggctatca gtggaagaag agttgtatga atcaggttac 1260  
 tgtatcaaca actgatagaa gaaacaataa gttgatttc aaaataaatt tggtagaaat 1320  
 ggatgagaag atactgggtg acttccgact ttctaagggt gatggattag agttcaagag 1380  
 acacttctg aagattaaag ggaagctcag cgatgttgTg agcagccaga aggtttggtt 1440  
 tctgttaca tgaggaagct gtcagctctg cacattcctg gtgaatagag tgctgctatg 1500  
 tgacattttt ctctctagag aagattatct attctgcaaa ctgcaaaca tagttgttga 1560  
 agagttctct tccattacc caaacatctt ccgatttgta gtgtttggca tacaataact 1620  
 aatgtatttt aattgtatgt aatgctttgg ggaaggatg gatcaaattc attaggtatt 1680  
 tgtccagctg tctttaaatt gtctggattt gaaaccaagt tatgggatac ttgagtttgc 1740  
 cagcttttat acccatgtag tagtatcact ttgaaaaat caaaagcttg ttcatcca 1800  
 agcaaaatat ttctctctt gcctatttaa ttgtaaggat gaataaacac agaccatata 1860  
 cagttgattg gttcatgaat gaggccagcc acaaaaatgt gtatgttaat gtatgtactg 1920  
 tatttcagt ttgggtatat gtgctgcaca agggcttgac ca 1962

<210> 5

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<220>

<221> misc\_feature

<222> (3)(6)

<223> The nucleic acid in this position can be either  
a "t" or "c".

<220>

<221> misc\_feature

<222> (6)

<223> The nucleic acid in this position can be either  
a "t" or "c".

<220>

<221> misc\_feature

<222> (13)

<223> The nucleic acid in this position can be either  
"t" or "c".

<400> 5

ggyggygagt ttyatggatt t

21

<210> 6

<211> 17  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic

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ttggacaggc caaagtc 17

<210> 7  
<211> 476  
<212> PRT  
<213> Homo sapiens

<400> 7  
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Glu Gly Ala Val Gly Glu Val Gln Leu Ala Val Asn Arg Val Thr Glu  
20 25 30

Glu Ala Val Ala Val Lys Ile Val Asp Met Arg Arg Ala Val Asp Cys  
35 40 45

Pro Glu Asn Ile Lys Lys Glu Ile Cys Ile Asn Lys Met Leu Asn Asn  
50 55 60

Glu Asn Val Val Lys Phe Tyr Gly His Arg Arg Arg Glu Gly Asn Ile  
65 70 75 80

Gln Tyr Leu Phe Leu Glu Tyr Cys Ser Gly Gly Glu Leu Phe Asp Arg  
85 90 95

Ile Glu Pro Asp Ile Gly Met Pro Glu Pro Asp Ala Gln Arg Phe Phe  
100 105 110

His Gln Leu Met Ala Gly Val Val Tyr Leu His Gly Ile Gly Ile Thr  
115 120 125

His Arg Asp Ile Lys Pro Glu Asn Leu Leu Leu Asp Glu His Asp Asn  
130 135 140

Leu Lys Ile Ser Asp Phe Gly Leu Ala Thr Val Phe Arg Tyr Asn Asn  
145 150 155 160



Arg Glu Arg Leu Leu Asn Lys Met Cys Gly Thr Leu Pro Tyr Val Ala  
165 170 175

Pro Glu Leu Leu Lys Arg Arg Glu Phe His Ala Glx Pro Val Asp Val  
180 185 190

Trp Ser Cys Gly Ile Val Leu Thr Ala Met Leu Ala Gly Glu Leu Pro  
195 200 205

Trp Asp Gln Pro Ser Asp Ser Cys Gln Glu Tyr Ser Asp Trp Lys Glu  
210 215 220

Lys Lys Thr Tyr Leu Asn Pro Trp Lys Lys Ile Asp Ser Ala Pro Leu  
225 230 235 240

Ala Leu Leu His Lys Ile Leu Val Glu Asn Pro Ser Ala Arg Ile Thr  
245 250 255

Ile Pro Asp Ile Lys Lys Asp Arg Trp Tyr Asn Lys Pro Leu Lys Lys  
260 265 270

Gly Ala Lys Arg Pro Arg Val Thr Ser Gly Gly Val Ser Glu Ser Pro  
275 280 285

Ser Gly Phe Ser Lys His Ile Gln Ser Asn Leu Asp Phe Ser Pro Val  
290 295 300

Asn Ser Ala Ser Ser Glu Glu Asn Val Lys Tyr Ser Ser Ser Gln Pro  
305 310 315 320

Glu Pro Arg Thr Gly Leu Ser Leu Trp Asp Thr Ser Pro Ser Tyr Ile  
325 330 335

Asp Lys Leu Val Gln Gly Ile Ser Phe Ser Gln Pro Thr Cys Pro Asp  
340 345 350

His Met Leu Leu Asn Ser Gln Leu Leu Gly Thr Pro Gly Ser Ser Gln  
355 360 365

Asn Pro Trp Gln Arg Leu Val Lys Arg Met Thr Arg Phe Phe Thr Lys  
370 375 380

Leu Asp Ala Asp Lys Ser Tyr Gln Cys Leu Lys Glu Thr Glu Lys Leu  
385 390 395 400

Gly Tyr Gln Trp Lys Lys Ser Cys Met Met Gln Val Thr Ile Ser Thr  
405 410 415

Thr Asp Arg Arg Asn Asn Lys Leu Ile Phe Lys Val Asn Leu Leu Glu  
420 425 430

Met Asp Asp Lys Ile Leu Val Asp Phe Arg Leu Ser Lys Gly Asp Gly  
435 440 445

Leu Glu Phe Lys Arg His Phe Leu Lys Ile Lys Gly Lys Leu Ile Asp  
450 455 460

Ile Val Ser Ser Gln Lys Val Trp Leu Pro Ala Thr  
465 470 475

<210> 8

<211> 513

<212> PRT

<213> Drosophila melanogaster

<400> 8

Met Ala Ala Thr Leu Thr Glu Ala Gly Thr Gly Pro Ala Ala Thr Arg  
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20 25 30

Tyr Gly Glu Val Lys Leu Leu Ile Asn Arg Gln Thr Gly Gly Gly Cys  
35 40 45

Gly Met Lys Met Val Asp Leu Lys Lys His Pro Asp Ala Ala Asn Ser  
50 55 60

Val Arg Lys Glu Val Cys Ile Gln Lys Met Leu Gln Asp Lys His Ile  
65 70 75 80

Leu Arg Phe Phe Gly Lys Arg Ser Gln Gly Ser Val Glu Tyr Ile Phe  
85 90 95

Leu Glu Tyr Ala Ala Gly Gly Glu Leu Phe Asp Arg Ile Glu Pro Asp  
100 105 110

Val Gly Met Pro Gln His Glu Ala Gln Arg Tyr Phe Thr Gln Leu Leu  
115 120 125

65

Ser Gly Leu Asn Tyr Leu His Gln Arg Gly Ile Ala His Arg Asp Leu  
130 135 140

Lys Pro Glu Asn Leu Leu Leu Asp Glu His Asp Asn Val Lys Ile Ser  
145 150 155 160

Asp Phe Gly Met Ala Thr Met Phe Arg Cys Lys Gly Lys Glu Arg Leu  
165 170 175

Leu Asp Lys Arg Cys Gly Thr Leu Pro Tyr Val Ala Pro Glu Val Leu  
180 185 190

Gln Lys Ala Tyr Gln Pro Gln Pro Ala Asp Leu Trp Ser Cys Gly Val  
195 200 205

Ile Leu Val Thr Met Leu Ala Gly Glu Leu Pro Trp Asp Gln Pro Ser  
210 215 220

Thr Asn Cys Thr Glu Phe Thr Asn Trp Arg Asp Asn Asp His Trp Gln  
225 230 235 240

Leu Gln Thr Pro Trp Ser Lys Leu Asp Thr Leu Ala Ile Ser Leu Leu  
245 250 255

Arg Lys Leu Leu Leu Ala Thr Ser Pro Gly Thr Arg Leu Thr Leu Glu  
260 265 270

Lys Thr Leu Asp His Lys Trp Cys Asn Met Gln Phe Ala Asp Asn Glu  
275 280 285

Arg Ser Tyr Asp Leu Val Asp Ser Ala Ala Ala Leu Glu Ile Cys Ser  
290 295 300

Pro Lys Ala Lys Arg Gln Arg Leu Gln Ser Ser Ala His Leu Ser Asn  
305 310 315 320

Gly Leu Asp Asp Ser Ile Ser Arg Asn Tyr Cys Ser Gln Pro Met Pro  
325 330 335

Thr Met Arg Thr Asp Asp Asp Phe Asn Val Arg Leu Gly Ser Gly Arg  
340 345 350

Ile Gln Gly Gly Trp Arg Arg Pro Gln Thr Leu Ala Gln Glu Ala Arg  
355 360 365

Leu Ser Tyr Ser Phe Ser Gln Pro Ala Leu Leu Asp Asp Leu Leu Leu  
370 375 380

Ala Thr Gln Met Asn Gln Thr Gln Asn Ala Ser Gln Asn Tyr Phe Gln  
385 390 395 400

Arg Leu Val Arg Arg Met Thr Arg Phe Phe Val Thr Thr Arg Trp Asp  
405 410 415

Asp Thr Ile Lys Arg Leu Val Gly Thr Ile Glu Arg Leu Gly Gly Tyr  
420 425 430

Thr Cys Lys Phe Gly Asp Asp Gly Val Val Thr Val Ser Thr Val Asp  
435 440 445

Arg Asn Lys Leu Arg Leu Val Phe Lys Ala His Ile Ile Glu Met Asp  
450 455 460

Gly Lys Ile Leu Val Asp Cys Arg Leu Ser Lys Gly Cys Gly Leu Glu  
465 470 475 480

Phe Lys Arg Arg Phe Ile Lys Ile Lys Asn Ala Leu Glu Asp Ile Val  
485 490 495

Leu Lys Gly Pro Thr Thr Trp Pro Ile Ala Ile Ala Thr Asn Ser Val  
500 505 510

Pro

<210> 9

<211> 483

<212> PRT

<213> Caenorhabditis elegans

<400> 9

Met Ser Ala Ala Ser Thr Thr Ser Thr Pro Ala Ala Ala Val Ala  
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Pro Gln Gln Pro Glu Ser Leu Tyr Arg Val Val Gln Thr Leu Gly Glu  
20 25 30

Gly Ala Phe Gly Glu Val Leu Leu Ile Val Asn Thr Lys Asn Pro Glu  
35 40 45

Val Ala Ala Ala Met Lys Lys Ile Asn Ile Ala Asn Lys Ser Lys Asp  
50 55 60

Phe Ile Asp Asn Ile Arg Lys Glu Tyr Leu Leu Gln Lys Arg Val Ser  
65 70 75 80

Ala Val Gly His Asp Asn Val Ile Arg Met Ile Gly Met Arg Asn Asp  
85 90 95

Pro Gln Phe Tyr Tyr Leu Phe Leu Glu Tyr Ala Asp Gly Gly Glu Leu  
100 105 110

Phe Asp Lys Ile Glu Pro Asp Cys Gly Met Ser Pro Val Phe Ala Gln  
115 120 125

Phe Tyr Phe Lys Gln Leu Ile Cys Gly Leu Lys Phe Ile His Asp Asn  
130 135 140

Asp Val Val His Arg Asp Ile Lys Pro Glu Asn Leu Leu Leu Thr Gly  
145 150 155 160

Thr His Val Leu Lys Ile Ser Asp Phe Gly Met Ala Thr Leu Tyr Arg  
165 170 175

Asn Lys Gly Glu Glu Arg Leu Leu Asp Leu Ser Cys Gly Thr Ile Pro  
180 185 190

Tyr Ala Ala Pro Glu Leu Cys Ala Gly Lys Lys Tyr Arg Gly Pro Pro  
195 200 205

Val Asp Val Trp Ser Ser Gly Ile Val Leu Ile Ala Met Leu Thr Gly  
210 215 220

Glu Leu Pro Trp Asp Arg Ala Ser Asp Ala Ser Gln Ser Tyr Met Gly  
225 230 235 240

Trp Ile Ser Asn Thr Ser Leu Asp Glu Arg Pro Trp Lys Lys Ile Asp  
245 250 255

Val Arg Ala Leu Cys Met Leu Arg Lys Ile Val Thr Asp Lys Thr Asp  
260 265 270

Lys Arg Ala Thr Ile Glu Gln Ile Gln Ala Asp Pro Trp Tyr Gln His  
275 280 285

Asn Phe Gly Gln Val Glu Thr Pro Asn Gly Arg Pro Leu Lys Arg Ala  
290 295 300

Arg Asn Asn Asp Glu Asn Ile Thr Cys Thr Gln Gln Ala Glu Cys Ser  
305 310 315 320

Ala Lys Arg Arg His Leu Glu Thr Pro Asn Glu Lys Ser Thr Leu Ala  
325 330 335

Glu Arg Gln Asn Ala Ser Phe Ser Gln Pro Thr Lys Thr Glu Asp Leu  
340 345 350

Leu Leu Thr Gln His Ile Asp Met Ser Gln Thr Asn Ser Asn Leu Leu  
355 360 365

Gln Arg Met Val Cys Arg Met Thr Arg Phe Cys Val Val Thr Asp Ile  
370 375 380

Arg Ser Thr Tyr Gln Lys Val Ala Arg Ala Ser Glu His Ala Gly Phe  
385 390 395 400

Gly Leu Arg Glu Thr Asp Asp Tyr Arg Leu Leu Val Thr Trp Arg Glu  
405 410 415

Val Ser Met Met Val Ser Leu Tyr Thr Met Gly Asp Ile Pro Asp Lys  
420 425 430

Pro Arg Val Met Val Asp Phe Arg Ser Leu Ala Val Thr Glu Ser Ser  
435 440 445

Leu Arg Arg Cys Ser Trp Thr Leu Glu Thr Val Cys Met Ser Gly Tyr  
450 455 460

Val Pro Thr Glu Thr Thr Gly Ser Pro Ile Leu Asp Met Cys Gln Glu  
465 470 475 480

Ile Arg Arg

<210> 10

<211> 496

<212> PRT

<213> Schizosaccharomyces pombe

<400> 10

Met Ala Gln Lys Leu Asp Asn Phe Pro Tyr His Ile Gly Arg Glu Ile  
1 5 10 15

Gly Thr Gly Ala Phe Ala Ser Val Arg Leu Cys Tyr Asp Asp Asn Ala  
20 25 30

Lys Ile Tyr Ala Val Lys Phe Val Asn Lys Lys His Ala Thr Ser Cys  
35 40 45

Met Asn Ala Gly Val Trp Ala Arg Arg Met Ala Ser Glu Ile Gln Leu  
50 55 60

His Lys Leu Cys Asn Gly His Lys Asn Ile Ile His Phe Tyr Asn Thr  
65 70 75 80

Ala Glu Asn Pro Gln Trp Arg Trp Val Val Leu Glu Phe Ala Gln Gly  
85 90 95

Gly Asp Leu Phe Asp Lys Ile Glu Pro Asp Val Gly Ile Asp Glu Asp  
100 105 110

Val Ala Gln Phe Tyr Phe Ala Gln Leu Met Glu Gly Ile Ser Phe Met  
115 120 125

His Ser Lys Gly Val Ala His Arg Asp Leu Lys Pro Glu Asn Ile Leu  
130 135 140

Leu Asp Tyr Asn Gly Asn Leu Lys Ile Ser Asp Phe Gly Phe Ala Ser  
145 150 155 160

Leu Phe Ser Tyr Lys Gly Lys Ser Arg Leu Leu Asn Ser Pro Val Gly  
165 170 175

Ser Pro Pro Tyr Ala Ala Pro Glu Ile Thr Gln Gln Tyr Asp Gly Ser  
180 185 190

Lys Val Asp Val Trp Ser Cys Gly Ile Ile Leu Phe Ala Leu Leu Leu  
195 200 205

Gly Asn Thr Pro Trp Asp Glu Ala Ile Ser Asn Thr Gly Asp Tyr Leu  
210 215 220

Leu Tyr Lys Lys Gln Cys Glu Arg Pro Ser Tyr His Pro Trp Asn Leu  
225 230 235 240

Leu Ser Pro Gly Ala Tyr Ser Ile Ile Thr Gly Met Leu Arg Ser Asp  
245 250 255

Pro Phe Lys Arg Tyr Ser Val Lys His Val Val Gln His Pro Trp Leu  
260 265 270

Thr Ser Ser Thr Pro Phe Arg Thr Lys Asn Gly Asn Cys Ala Asp Pro  
275 280 285

Val Ala Leu Ala Ser Arg Leu Met Leu Lys Leu Arg Ile Asp Leu Asp  
290 295 300

Lys Pro Arg Leu Ala Ser Ser Arg Ala Ser Gln Asn Asp Ser Gly Phe  
305 310 315 320

Ser Met Thr Gln Pro Ala Phe Lys Lys Asn Asp Gln Lys Glu Leu Asp  
325 330 335

Arg Val Glu Val Tyr Gly Ala Leu Ser Gln Pro Val Gln Leu Asn Lys  
340 345 350

Asn Ile Asp Val Thr Glu Ile Leu Glu Lys Asp Pro Ser Leu Ser Gln  
355 360 365

Phe Cys Glu Asn Glu Gly Phe Ile Lys Arg Leu Ala Lys Lys Ala Lys  
370 375 380

Asn Phe Tyr Glu Ile Cys Pro Pro Glu Arg Leu Thr Arg Phe Tyr Ser  
385 390 395 400

Arg Ala Ser Arg Glu Thr Ile Ile Asp His Leu Tyr Asp Ser Leu Arg  
405 410 415

Leu Leu Ala Ile Ser Val Thr Met Lys Tyr Val Arg Asn Gln Thr Ile  
420 425 430

Leu Tyr Val Asn Leu His Asp Lys Arg Lys Cys Leu Leu Gln Gly Val  
435 440 445

Ile Glu Leu Thr Asn Leu Gly His Asn Leu Glu Leu Ile Asn Phe Ile  
450 455 460

Lys Arg Asn Gly Asp Pro Leu Glu Trp Arg Lys Phe Phe Lys Asn Val  
465 470 475 480



Val Ser Ser Ile Gly Lys Pro Ile Val Leu Thr Asp Val Ser Gln Asn  
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 agattcttc atcaactcat gggaggggtg gttatctgc atggtattgg aataactcac 120  
 agggatatta aaccagaaaa tcttctgtg gaagaaaggg ataacctcaa aatctcagac 180  
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gcagtttgca ggacaggata atcttctcta ggaag 35

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